

Reprinted from THE PHILADELPHIA MEDICAL JOURNAL, July 12, 1902.

MUTISM AND APHASIA.
A CLINICAL LECTURE.

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Of all the central disturbances affecting the power of expression there is none that more excites our interest than the absence of speech. In the cases which I will show you you will see the representatives of the most frequent varieties of these central deprivations of speech.

As a general thing in modern times, one is accustomed to apply the term *aphasia* when there is an absence of speech. It is, however, not entirely correct to apply that expression to all the forms which come under consideration. It will be better for us to reserve the term for those cases in which speech had existed and subsequently became lost. We would therefore consider those patients as having aphasia, who have been deprived of their power of speech, by reason of an embolus in the brain, apoplexy or by any tumor which causes disturbance of the central pathway, or by some psychical disturbance that has deprived them of a power of speech which previously had been perfect. In contradistinction to these cases there are those patients in whom there has never been a thorough development of the motor speech center and in whom there had originally existed various impediments to the development of that center. We will therefore not speak here of aphasia, but of mutism.

Audimutitas.—By the term *audimutitas*, in German "Hörstummheit", we understand a condition occurring in children who hear perfectly well and are normal from a psychical point of view, but who still have not learned to speak.

The little patient I show you here is ten years of age. She was brought to us when she was about eight years of age and at that time was completely mute. Even now she speaks but little, as you will soon be able to convince yourselves. But little progress has been made during this time as far as her development of speech is concerned. At the same time you see that her upper lip is considerably shortened by large strands of cicatricial tissue. This condition presents the characteristic picture of a bilateral congenital hairlip which has been subjected to early operation. When the child opens her mouth we find that there is a plainly visible scar in the raphe of the palate. This is a congenital cleft palate. The new soft palate, which has formed since the operation by Dr. James Julius Wolff, is sufficiently long and movable. Only between the upper row of teeth and the upper lip there is still the small communication between the oral and nasal cavities, but which, as can be easily demonstrated physiologically, is not of particular importance as far as speech is concerned. As you can easily convince yourselves, the child understands everything that you say to it. Commands, even those of a complicated nature, she carries out correctly, her expression is intelligent, and she shows that she is able to follow, with attention, conversations that are held between adults, as soon as such subjects are discussed which one of her age is able to comprehend. The child is particularly small for her age. In general, her bodily movements are below normal. She only learned to walk in her fourth year and even now, as you see for yourselves, she is clumsy and weak upon her feet. When walking, she places her feet upon the floor with difficulty and at one time she fell quite often. She is just as clumsy with her hands. Nevertheless, she is self-reliant but cannot hold the pencil correctly when writing, so that she encounters the greatest difficulty in performing her writing exercises and at her present age can hardly write at all. In those letters which extend from right to left,

as for instance the number, one, she invariably transposes from left to right. She can write the letters t, i, m, and n, while, on the other hand, her reproduction of the letter l is hardly recognizable. But, as you can at the same time convince yourself, the child can read small syllables correctly. The impediment in writing in this case, therefore, obviously depends only upon an absence of mechanical dexterity.

The balance of the examination of the child shows nothing particularly abnormal. The reflexes as well as sensation are normal. Digestion is now performed regularly, while some years ago the child suffered frequently from constipation. When admitted to the clinic, she still had nocturnal incontinence of urine, which, however, soon disappeared upon the administration of proper diet.

As far as the family history is concerned, the child comes from a highly intelligent professor's family. The mother is highly neurasthenic, while the father, as well as four other children, is absolutely healthy. As already stated, she is the youngest of five children and was born with a bilateral harelip and cleft palate. The harelip was operated upon immediately after birth, while the cleft palate was operated upon when the child was one and one-half years of age.

Perhaps this introduction to the case will not immediately convince you that the child is psychically normal, as physically she conducts herself quite clumsily and, as far as her speech and education are concerned, is considerably behind other children of her age. Perhaps even the tests I have made in order to appeal to her intelligence may not entirely convince you of the fact. Therefore I must beg of you to believe me that the child is psychically entirely normal. I am able all the more to claim this, as I have had the child in my clinic for over two years and am familiar with the expressions of her thoughts and powers of observation. We therefore have to

deal here with a case of word deafness which becomes complicated by a series of physical defects.

In order to be able correctly to view the causal relationship of the child's condition, it will be well to recall how speech develops in the normal child. As is well known, the normal child understands at the eighth month a large variety of words, which, however, it has not yet been able to express. Many investigations have been made as to how many words a child of eight months can speak; but it would be more important to extend this investigation, and ascertain how many words a child of one year can understand. Naturally the sensory vocabulary would be by far greater than the motor one. The sensory center of speech is therefore markedly developed before the motor speech center shows even a beginning of development, and we have in all children up to a certain age a normal physiological word deafness. The limit, up to which we consider this word deafness as physiological, is indiscriminately selected by us, in that we depend upon our general experience and say, that a child, which has not begun to speak at the age of three years, is afflicted with word deafness.

The question now arises, as to what causes are responsible for the fact that a child does not begin to speak at a certain age, notwithstanding that it understands a large number of words. In a compilation of 289 cases in my dispensary, of which there were 160 males and 129 females, I was able to attribute the condition in 107 cases, that is 37%, to hereditary causes. It furthermore showed that the hereditary taint was markedly more derived from the paternal than from the maternal side. In the case presented to you here, however, in this little ten-year-old girl, no hereditary cause can be demonstrated, either from the parents or from the grandparents. Almost in all cases of word deafness we find that the general bodily movements, walking, running and the use of the hands, also become de-

ficient. As a matter of fact there exists a paralellism between learning to walk and learning to speak, and therefore the children who learn to speak late also generally learn to walk late. I emphasize this particularly as the opinion seems to be disseminated among the laity that children who learn to walk late, learn to speak all the earlier, and vice versa. Speech, however, considered as an external manifestation, is only movement, and as in cases of word deafness sensory speech is well developed and only the motor one restricted, it does not appear wonderful to us that the motor power in these cases is restricted or deficiently developed. Also in this little girl, the general motor retardation is plainly visible.

Furthermore, I found in these 289 dispensary cases hyperplastic faucial tonsils in 152 cases, or 52.6%. It is well known that these hyperplasias, as a rule, can markedly influence the psychical as well as the bodily development of children. In many cases I have been able to remove a word deafness, which had existed up to the sixth year, by operation upon the hyperplastic tonsils, so that I myself, as well as the relatives of the children, was astounded with what rapidity speech developed after the operation. In one patient of my colleague, Flatau, upon whom he operated at my suggestion, (the patient was a boy of six years who was completely mute) speech was completely restored six weeks after the operation and as good as would be found in a normal boy of six years. It should be added that in this case the father was a teacher and had done all in his power to bring about speech in the child by exercises, but in vain. It is therefore evident that hyperplastic tonsils—and I count among these cases only those which are so marked that they extend beyond the border of the posterior nares and can influence the respiratory passages considerably—can without a doubt have an inhibiting influence upon motor speech. In our child, adenoid vegetations are not present. Instead, however, we find in this case the

congenital cleft palate and harelip the large size of which is still demonstrable by the numerous and disfiguring scars that are present. The operation has been markedly successful and performed early, so that one could hope this purely organic inhibition should not markedly influence the development of the child's speech. Nevertheless, the defect in this child's case is to be attributed to organic causes; and this was more markedly demonstrable when the child was first brought to me than now, although it is still present. When the little patient was first brought to me two years ago, in speaking the word "papa" the child attempted to imitate what had been spoken to her. When, however, the child appreciated the fact that the first syllable which she uttered did not correspond in sound to the one spoken to her, she stopped and nothing could again influence her to repeat the attempt. Only when the excitement incident to her first failure began to disappear, did she again attempt to repeat the word, only again to be frightened into a period of inactivity by the repeated failures.

In the meantime, however, she learned a series of sounds. You hear now that she can correctly reproduce the letters b, p, d, t, and even k and g. She can even call several other children by name, and can transmit to them a few small requests.

The sounds which still cause her some difficulty are the fricative sounds, and as soon as I dictate a difficult one to her, you will immediately appreciate the effect. If I dictate to the child the sequence of syllables ss, a, ssa, she attempts to repeat the first ss, and she remains silent as soon as she fails to accomplish this plainly. On the other hand, she is able immediately to repeat words composed of simple explosive sounds and evidently with pleasure at her success.

I believe that in this case the impediment caused by the organic defect is very evident. As the child herself observed that she could not speak like others, she ceased speaking and she weakened in her

zeal for repetition (which is just as markedly present in her as in other children) when she observed that she could not imitate at will.

What is to be done in this case and what has been done for the purpose of compensating for the defect, I will show you when we come to speak in our lectures of the mechanical dyslalias. At present it is simply to be stated, as is here shown, that a central impediment to development may occur, or that it may be caused by an organic peripheral lesion. While it is in itself a rarer condition that girls are mute, this rarity nevertheless is not so great that one can deny the occurrence of mutism in girls. On the whole, girls develop the faculty much more quickly than boys, because their talent for imitation, as a rule, is greater and because they find more pleasure in imitating. This, of course, has nothing to do with the intellectual development, as the development of intellect and speech by no means progress in a parallel manner. There are hopeless idiots who talk without stopping and even employ the expressions and manner of speech of adults, and there are also highly intelligent children who, at the age of two, and even at the ages of $2\frac{1}{2}$ and 3 years, cannot speak and who subsequently develop the faculty of speech normally. That audimutitas was very well known to the older clinicians, is seen in a statement by Hieronymus Mercurialis in his text-book on Diseases of Children (*de morbis puerorum*, 1584), in which he tells that Maximilian, the son of Emperor Frederick the Third, was mute up to his ninth year and afterward not only acquired speech, but even became quite eloquent; "*nam relatum est, Maximilian Frederici III, imperatoris filium, usque ad nonum actetis suae annum elinguen et mutum fuisse, sed tamen beneficio naturae non solum, acquisivisse verum etiam fuisse eloquentissimum.*"

Deaf Mutism.—The little boy you see here is seven years of age and has always been healthy. The parents are cousins, therefore consanguineous. The father is a neurasthenic and the mother entirely

healthy. In the paternal family there have been frequent manifestations of psychical depression and two brothers of the father committed suicide. The paternal grandfather died of paralysis; on the other hand, the history on the maternal side is good. The birth of the patient was difficult and attended by instrumental interference. You see that the skull of the child is strikingly asymmetrical.

The child learned to walk early, developed physically in a normal manner, although he is built very slender. On the other hand, it soon showed that it heard little or nothing and speech did not appear. We have therefore to deal here with a deaf-mute whose congenital impediment of hearing or deafness appears to be amply founded on an hereditary taint. The boy is very intelligent, comprehends remarkably easy, observes keenly and, under the systematic training of a deaf-mute teacher, is progressing remarkably well. You hear that his voice hardly sounds like that of a deaf-mute, and that he speaks small sentences and words well and with almost normal accent.

If we examine his acuity of hearing we find that he appreciates the whole scale. Only, upon sounding the deeper notes, do we elicit a diminished appreciation, although these tones are not of material importance so far as the perception of speech is concerned. The scale, from *b* to *g*, which has been described by Dezold as of considerable importance for this subject, is easily appreciated by him. He also hears words and repeats them clearly and distinctly. The pitch of the voice, in pronouncing words, is also easily imitated by him, and especially the sibilant tones are repeated with promptness. Individual words are likewise heard by him, although not with the same certainty. Systematic exercises he has learned and known. But this appears to be in hearing having increased the utility of his power of audition, although there is not an especial intensification of the same. It also appears, that he easily hears little sentences and expressions, with

rather an appreciation of the accent and the sequence of vowels than of the words themselves. His hearing is, furthermore, so good, that he can hear the calling voice in a large room at about 6 to 8 meters, but in the open, of course, only at a few paces.

One would suppose that, with this relatively good power of hearing, the child has absorbed of itself some of the speech heard among its surroundings during its period of development. But this is by no means the case, and we see therefrom that a moderate diminution of the acuity of hearing in children may eventually lead to total deafness. An extraordinary excitation of the hearing power still present is here requisite, in order that it may be consciously employed, and the exercises which are necessary for producing this are to be strenuously recommended in all children that have suffered from impairment of hearing since birth. These exercises were introduced by Itard into the Paris Deaf and Dumb Asylum, at the beginning of the last century, and energetically employed there for 15 years. If the results of these exercises did not fulfill the expectations, it was because at that time too much had been expected from them after brilliant results had been obtained in a few cases. There is no doubt, when greater portions of hearing remain, that exercises may bring about an appreciation of speech; but it is erroneous to believe that high grades of impairment of hearing, or even deafness, can be cured. As worthy of recognition as are the efforts recently made by Urbantschit in Vienna, too great hopes regarding deaf-mute children should be warned against. Among the great number of deaf-mutes there are, relatively, only few among whom systematic exercises in hearing are of avail. To select these few correctly is naturally of great importance, and if the scale described by Bezold is really of value, it will be very gratifying. According to my own experience, I still doubt its efficiency. I believe that only such children are capable of being

trained by such exercises, and only in such are they of practical value, in whom the power of hearing vowels is present. Notwithstanding that it may appear that this allusion to Itard's classification is a step backward in science, I still maintain, in spite of Bezold's scale, that the most reliable test for human hearing is the human voice itself.

In our little patient the activity of hearing, as far as speech is concerned, will be of the greatest importance, as it has been heretofore. But this will not be sufficient for his associations, and therefore he will have also to use his eyes for appreciating what is spoken to him.

To remove the little one to a greater distance from us, I place him now about 15 meters away, and you see that he easily repeats the simple words and sentences which I dictate to him, without any other facial movement than those normally employed in speaking. He therefore reads what is spoken to him from the lips. In the development of speech this power, to read from the lips of the speaker, develops by itself. But it is very important that the speaker does not articulate otherwise than a normal individual would in the act of speaking.

For, if the child only learns to read off distorted movements of the mouth, it will not be competent for practical life. If you, yourselves, whom the patient has never known, speak a few words to him, you will easily be convinced that he will read also from your lips without difficulty. In a previous lecture we have learned the procedure that is necessary to bring about imitations and ability to interpret the movements of speech, and I will therefore refer you to what was said at that time.* At this point I will take up the not unimportant question as to whether this reading of the movement of speech should be practised in those deaf-mutes,

*The readers of this article are referred to the *American Annals of Deaf-Mute-Education*, translated last year by the Volta Bureau in Boston.

whose power of hearing is still preserved to the extent that it is in this case. At the first glance one is lead to believe that this question should be answered in the affirmative, but it has been the subject of some protest by several aurists and in particular by Urbantschit. According to these authors, the interpretation of the motions of speech should be prevented as far as possible, as the power of hearing may otherwise become injured. There is, however, nothing more arbitrary than this assertion. Nobody has yet proven that the power of hearing will be thus impaired, and notwithstanding that it is natural that, during the exercises of hearing, the face should be turned from the dictator, the reading off of the motions of speech is nevertheless absolutely necessary, even when marked hearing is still present, in order to accord the patient a position in society. Patients even come to me for the purpose of learning how to interpret the motions of speech, and who are able to understand general conversation in a room at a distance of ten meters, or, in other words, a distance of two rooms. But for this purpose considerable exertion is required and they soon tire, and for that reason look for some means of replacing the power of hearing. It does not very rarely occur that such individuals easily understand the beginning of the conversation, but soon tire to such an extent that they hear nothing more. This rapid tiring of the power of hearing, which is characteristic of certain cases, is best obviated when such patients learn to employ the eye for the perception of speech, in addition to the ear. I have never seen an impairment of hearing result from such a procedure.

We all employ our eyes for the perception of what is spoken, and I have called your attention to the fact that we all pay remarkable attention to these motions. If, while in the theater we do not quite understand an actor or a singer and then look at him with the opera glass, we immediately understand him better. This is obviously the same proce-

ture as the one under consideration, but one which in most cases is performed unconsciously and is likewise latent. We are simply accustomed from childhood to observe the face of the speaker, and not only to appreciate speech with the ear, but also with the eye. If, therefore, you desire somewhat to modify the Wiernicke-Lichteim scheme of the speech phenomenon it must be accomplished in the matter indicated by the accompanying figure. We have two centers of perception for speech, an acoustic and an optical one. The acoustic one is employed for the sounds accompanying speech, the optical one for the movements of speech, that is for the various movements of the lower jaw, the cheeks, the lips, floor of the mouth, etc. Both of these centers have always been recognized as being in the most intimate relationship in the normally developed human being, and both are likewise in direct communication with the motor speech center. From the motor speech center tracts emanate which influence respiration, voice and articulation, and the co-ordination of which composes human speech. These tracts are not only the exponents of expression in a peripheral sense, but also are the exponents of a peripheral conduction of impression, which inform us by various sensations as to the adjustment existing in our speech mechanism. For instance, I can appreciate the intention of articulating the letter "l" without doing so loudly and without looking into the mirror for the purpose; and yet I plainly feel that my tongue is in the correct position for the purpose of articulating that letter. Such an appreciative sensation is the real controlling factor in our movements of speech. For, if hearing were alone the controlling element of speech, as one frequently reads, it is obvious that such a control would be exerted too late and could only manifest itself after we had spoken and had appreciated with the ear the product of speech and, furthermore, a correction

under such circumstances would no longer be possible. We must, therefore, also accept the assumption that there are sensory paths of peripheral impressions in addition to the paths of peripheral expression which emanate from the motor speech center. Therefore we have three peripheral tracts of impression: First, the auditory tract, second the optical tract, and third the last described sensory tract. Both of the sensory and motor speech centers are in communication when conception of a spoken word takes place. The seats of impression are, of course, distributed throughout the cerebral cortex and can therefore not be considered as a center. Should we, however, speak of them collectively as a "conception center," we must, as Wiernicke does, place such an application within quotation marks, and qualify the word by stating that this "conception center" is not really a center, but a representation of the sum total of all the impressions attending the conception of the spoken word.

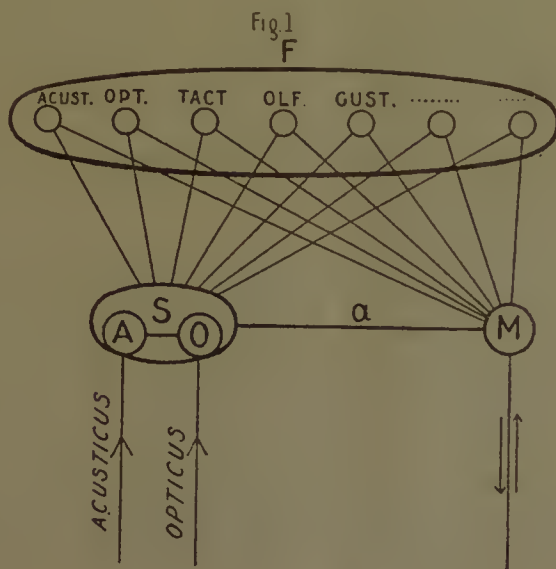
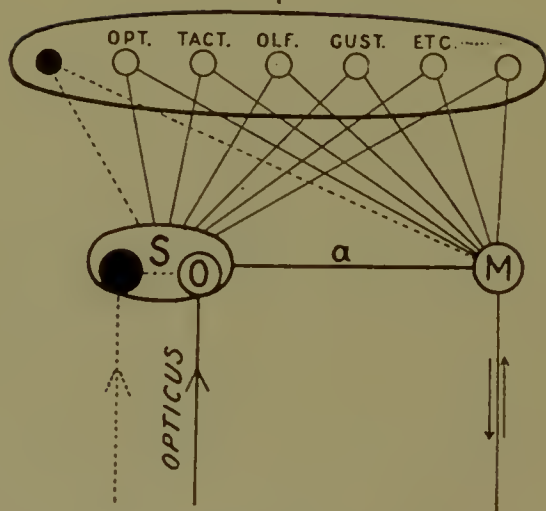


Fig. 2
F



In the figure we have connected these individual impressions into one center (F) by an oval line.

If, therefore, we want to appreciate the psychological condition of the child that is a deaf-mute, we can do so by the following figure. The sound center for speech is absent or only slightly present, and, furthermore, acoustic appreciation is also absent to a like degree. But the optical pathway is left, while the perception of the patient's own efforts at speaking is also left to him.

Based upon this psychological scheme, it is absolutely untenable to dispute the development of phonetic speech in children that are deaf-mutes; for it is evident that the two ways that are left, the face and the sensation, are the ones that are naturally given for speech. If, therefore, reproaches are entertained against the German method of thus developing the deaf-mute, and claims are made that it is an unnatural procedure, those finding themselves within this category simply prove that they have not sufficiently investigated the psychology of speech.

The German method of instructing deaf-mutes is to be considered as a natural one, and if it has been claimed that the deaf-mute is supplied with gestures as a substitution for a natural speech, it would appear that the normal individual does not gesture at all. Nevertheless, we all have a natural gestural speech at our disposal, and if the deaf mute employs this, he obviously confines himself within the natural phenomena of speech. But, if he employs gestures, it represents an accomplishment. There is, therefore, no reason for the deaf-mute only to employ gestures, nor is it justifiable to say that gestures are the only natural means at his disposal.

There are, of course, some races in whom gestures play an important role, for instance, gestures are substituted in Southern Italy almost entirely for the voice, and whosoever has seen two Neopolitan girls converse from house to house by means of gestures, notwithstanding that their readiness of tongue was not in the slightest affected, will be convinced that conversation can be accomplished without the voice. Only those who have not practised this sort of speech will not be able thus to communicate with one another and will find themselves in the same position as those whose speech is perfect and who try to converse with a deaf-mute. In order that gestural speech may be available for the expression of all thoughts, it will have to go through such an extensive state of development that finally it can be no longer appreciated by the normal individual. The deaf-mute, who only employs gestures, isolates himself from his fellow-beings. But, as he lives with them and must live with them, and as he finally receives more from his fellow-men than he is able to give them in the way of speech, the acquisition of the latter naturally only affects the interests of the deaf-mute himself.

Motor Aphasia.—I here present to you a gentleman who was deprived of his speech about a year and a half ago by a stroke of apoplexy. At the same time he became paralyzed on the right

side of the face and body. This paralysis has gradually decreased to the extent that he is able to walk with the aid of a cane, although his speech has not yet returned. Everything that he wishes to say he expresses by means of the sequence of syllables wa-wa-wa, although he understands without difficulty what is said to him. If you ask him about certain articles which are present in the room, he immediately shows them to you; and if you propound questions to him, which he is enabled to answer by nodding or shaking the head for the purpose of conveying the words "yes" and "no", he answers them correctly. Obviously his appreciation of speech has not suffered. Likewise he is able to read written and printed words, but perceptibly soon tires. His power of writing is extremely limited, independent of the fact that he must write with his left hand; and he constantly makes many errors and can hardly write one word correctly. Even syllables, which are given to him to write, he copies incorrectly, all this showing that the power of writing is markedly disturbed. Spontaneous speech, as already stated, is confined to the senseless syllables, "wa-wa-wa". It is impossible for him to repeat even the senseless syllables, and even if the syllable "wa" is dictated to him he is not able to repeat it, voluntarily. This shows that, when he spontaneously employs the syllable "wa" for purposes of expression, it is performed more automatically than voluntarily, a very peculiar phenomenon which can almost always be demonstrated in such grave motor aphasiae in which several syllables and sequences of words remain.

The treatment for these disturbances consists in having the patient follow up systematic exercises in articulation, beginning with the simplest ones, providing the process has run its course. It is well known that in no one are the speech-centers developed from birth, but only become developed to the extent that they are found in the adult after long training and imitation. The indication is, therefore,

to develop the speech in the patient with motor aphasia in the same manner that speech is acquired by the child, that is, by imitation, employing for this purpose both the power of hearing and sight. Therefore the exercises of individual sounds should be conducted before a mirror, and he should be instructed to watch the motions of the mouth of his teacher with the greatest of care. The instruction should, of course, begin with easily combined vowels like *a*, *e*, *i*, then articulation practised by means of such letters as *p*, *b*, and *n*, and then these letters combined so that the patient will be able to repeat, *mamma*, *papa*, etc. The words should be written and writing exercises practised.

The subject will become clear to you if you will again observe Fig I. The faculty of speech has not yet been acquired on the way from *F* to *M*, although repetition takes place correctly, via *a*. It therefore becomes necessary also to develop the path from *F* to *M*, which is accomplished by showing pictures to the patient, representing the words he is able to repeat. These words, however, are not spoken to him, but he is required to speak them himself after the respective pictures are pointed out. I will not dwell here upon the details of these exercises, as it would entail another practical demonstration to you of the whole physiology of speech, for whoever is interested in motor-aphasia and its treatment must be able completely to master the physiology of speech. Together with the methodical exercises in articulating and speaking, we also have exercises in writing performed with the left hand, presuming that the exercises will influence the right side of the brain and more easily establish the articulatory function of a new center. All recent clinical observations more than ever show that a lost left speech-center may be, and in fact is, supplanted by a right speech-center and in a corresponding area. By this means we are enabled, even in long-persisting motor aphasia, to obtain splendid results,

provided that the other cerebral functions have not been particularly affected.

Formerly the prognosis was viewed from the standpoint of Kussmaul, who states in his noted book that the prognosis depends upon the duration of the aphasia. I had here under treatment a military officer, who, in consequence of an injury sustained by falling from a horse, had for ten years suffered as a result of the traumatism, first becoming

	Spoken Language			Written Language					
	Speech Conception	Spontaneous Speech	Repeating	Conception of Writing	Reading Aloud	Spontaneous Writing	Writing Dictation	Copying	
1 Cortical Sensory Aphasia	—	+ P	—	—	—	—	—	+	Sensory Aphasia
2 Subcortical Aphasia	—	+	—	+	+	+	—	+	
3 Transcortical Aphasia	—	+ P	+	—	+ C	+	+	+	
4 Cortical Motor Aphasia	+	—	—	—	—	—	—	+	Motor Aphasia
5 Subcortical Motor Aphasia	+	—	—	+	—	+	+	+	
6 Transcortical Motor Aphasia	+	—	+	+	+	—	+	+	
7 Conduction Aphasia	+	+ P	+ P	—	—	—	—	+	»
8 Subcortical Alexia				—	—	+	+	—	= Paralysis of Arm
9 Subcortical Agraphia				+	+	—	—	—	
10 Cortical Alexia	via A C	B		—	—	—	—	—	
11 Cortical Agraphia				+	+	—	—	—	= Paralysis of Arm
12 Conduction Agraphia				+	+	—	—	—	
13 Transcortical Alexia				—	—	+	+	+	
14 Transcortical Agraphia				+	+	—	—	+	

P=Paraphasia
Z=Paragraphia

FIG. .3.

so asphasic and then dysphasic that no one could understand him. Nevertheless, within a few months it was possible so to restore him, by means of systematic exercises, as to provide him with speech that was generally well understood.

Easier to treat are those cases which we must classify under the group of subcortical motor-aphasia. As an example of this variety I show you here a gentleman, 44 years of age, a former bank official, who for one and a half years has suffered from

grave central disturbance of speech, as a result of apoplexy. The paralysis of the right side of his body, with the exception of the right side of the face, has fairly well receded, although the motor power of the right hand is still plainly less than that of the left one. You do not notice much more of the speech defect itself, as he has exercised for some time, and yet you plainly recognize the difficulty entailed in the speech movements. The patient can repeat everything, although with difficulty, as well as express his thoughts. There were not any disturbances of the powers of writing or reading. He has even occupied the time that has elapsed during his grave illness in the pursuit of literary work, and is now engaged in publishing a scientific work on banking.

If you will reflect upon the aggregation of individual symptoms of the central disturbances of speech, as indicated by the following illustration, you will find that the disturbance of the power of writing and reading in cortical motor aphasia chiefly differentiates it from subcortical motor aphasia. Such a schematic diagram has a particular value, in so far as it prevents us from overlooking important points in the examination of cases of aphasia. It is obvious that the individual categories of aphasia as delineated in this diagram are seldom observed in such a pure form, for the cortical motor aphasia is usually also accompanied by transcortical motor disturbances. I called attention to the latter in the first case of aphasia that I showed you, and it was exemplified by the fact that, although the patient was able to *repeat* the word "Baum" (tree), he could not follow up his conception of the word with a stimulation of the motor center.

Sensory disturbances are also very frequently associated with motor aphasia, only they are so obscured by the motor picture that hardly any attention is paid to them. In the case of the first gentleman which I introduced to you, the central disturbance was first manifested by evidences of

fatigue when he listened for some time. While he distinctly showed, during the first few minutes of his attention, that he understood what was said to him, nevertheless, as the test progressed, he became fatigued to such an extent that he could no longer concentrate his attention upon what was taking place. At first this manifestation escaped me, because I only tested the perception of the patient with a single word, and even you yourselves have not noticed any disturbance of perception during the test that was performed in your presence.

While you have seen that the patient last shown to you has made a cheerful impression, you must have also noticed that the first patient shown to you was apparently the subject of psychical depression. You saw that he became more sorrowful as the test proceeded, and for this reason I ceased my examinations. I wish to state that frequently he even weeps. Such a depression of spirit does not necessarily have to be dependent upon an extension of the process or the occurrence of an encephalitis. I have always found these conditions in such cases of absolute motor aphasia and particularly so when the patients were highly intelligent individuals. This frame of mind in the patients is caused by the feeling of helplessness toward their fellow-men and the continual repeated experience that no one understands what they wish to say. If we for a moment attempt to imagine ourselves in such a position, we can hardly wonder at their frame of mind. It is therefore not unimportant in the treatment of this disease to try to overcome such psychical derangements. Once before I called attention to this matter, in a small thesis of mine entitled "Concerning the Handling of Persons with Aphasia," and called attention to the fact that the surroundings of such a patient must be suitable to his condition and, furthermore, that those around him must accustom themselves to ascertain his wishes and to make his position as easy and as comfortable as possible. Furthermore, the

patient himself must try to express his thoughts by characteristic signs, so as to facilitate the recognition of his wishes by those around him.

It is in such cases of total aphasia as present in this gentleman that gestural speech is pre-eminently of use, and we will next try to supply him with the natural gestures for the most useful articles and for the purpose of aiding him to communicate his wishes. Perhaps it may not be unessential for you gentlemen to know some of the characteristic signs of gestural speech.

You will soon see that he will recognize these gestures as old acquaintances. This gesture for *yes* and *no*, the nodding and shaking of the head, is well known to you all. For the purpose of indicating various articles of food, gestures are made by pointing into the air and then simulating the motions that are concerned in eating: the hand of the patient is so placed as if it contained something to eat, is then placed in the direction of the mouth and prehension and mastication imitated. For the purpose of indicating the word *soup*, the motion of blowing upon the hot liquid for the purpose of cooling and taking it out of the plate with the spoon is likewise imitated. Meat is so designated that the patient presses upon the musculature of the left arm with the right hand and simulates the motion of eating (in this case the right arm was paralyzed and unavailable). For designating the word *butter* the patient imitates the motions that are concerned in cutting the butter and spreading the same upon the bread with a knife. If he wants *salt*, he is supposed to point to his mouth and then imitate the motion necessary for sprinkling the salt with the fingers. For *beverages*, the hand is pointed toward the mouth and the motions concerned in drinking imitated. *Milk* is signified by the motions concerned in milking, *water* by imitating the motions of a pump-handle, *knife* and *fork* are easily indicated by the usual movements accompanying their employment, the *fork* by motions

simulating thrusting, the *knife* by imitating the motions of cutting and the *spoon* by indicating the motions required for obtaining fluids with it. Articles of apparel are best indicated by touching them or by pointing to those portions of the body that they cover. If this is not understood or the clothes are not available, the motions indicating how they are put on are simulated. Adjectives are thus indicated: For *strong* the fist is clenched and tightly placed against one of the muscles; *weak*, on the other hand, is indicated by relaxing the tension of the muscle previously used for indicating strength and the gesture intensified by shaking the head at the same time. The word *healthy* is indicated by stroking the body and adding thereto the sign that represents *strong*. *Illness* is indicated by placing the hands upon the abdomen, stroking the hand thereover, at the same time giving the sign indicating weakness. *Hunger* and *thirst* are universally understood by signs simulating the motions of eating and drinking. *Fatigue* is indicated by hanging the head and closing the eyes.

There is no room in this article to quote more examples of gestural movements. The natural gestures are so simple and so easily understood by us all, when once accustomed to them, that no physician would find it difficult here and there to supply special gestures. You also find in the well-known book of Schmalz, "Deaf Mutes and Their Education," published in Dresden and Leipzig in 1848, a very pretty compilation of the various gestures concerned in indicating articles, persons, domestic animals, peculiarities and the various conditions of life.

I consider the employment of gestures only of value as an auxiliary measure, when they become a matter of necessity, and only applicable in cases in which the patient is absolutely unable to make himself understood by words or any other manner of speech. Considering the awkwardness of most individuals in conducting gestures, and in view of the

little experience they possess in this direction, this naturally places the aphasia patients in an uncomfortable position, causing them to become impatient easily, owing to the futile efforts which they exert in making themselves understood. Therefore I believe that natural gestures are indicated at least during the early stages of grave aphasia.

Finally, I introduce to you a young girl, 24 years of age, who has been deprived of her speech for one and one quarter years. She comes from an absolutely healthy family. Her father is a forester and has always been healthy, as has her mother. Her brothers and sisters are alive and healthy. She herself, however, has suffered from an attack, the course of which is described by her mother, but not sufficiently clear to enable us to picture it to ourselves. It is alleged that she had felt a crawling sensation in the right arm and leg and that these extremities had also become the seat of a paralysis. Nothing certain can be elicited from the obscure description of the symptoms and at present there are absolutely no signs of paralysis. The young girl walks without any difficulty, the motor power on the right side is doubtless more marked than upon the left, the tongue is protruded without deviation and the face shows a normal and regular pose. Examination of the individual cutaneous sensations shows nothing abnormal. Cold and heat, pointed and blunt instruments, are all immediately and correctly differentiated by the patient, and neither hypoesthesia nor hyperesthesia are present anywhere. The only abnormal symptom of motion is seen in the tongue, which, although it is protruded straight from the mouth, as already stated, nevertheless is somewhat tremulous. The young lady herself is somewhat depressed, a condition, as shown in the first case I presented to you, is frequently present in cases of motor aphasia of long duration. If we ask her anything she attempts to speak. She tries several times to apply her voice, moves the lips, lower jaw and tongue, but without accomplish-

ing the desired utterance successfully, whereupon she gives up making further efforts to speak and indicates "no" by motions of her head. Here and there she also adds, "it will not go". Spontaneous speech, therefore, is as good as lost. Only individual words are occasionally spoken, like "eating", "drinking", "sleeping", etc. In some instances she herself finds the correct designation for an object that is shown to her.

In repeating, however, a marked characteristic is manifested. Almost every word is immediately repeated, but more difficult and longer words are always distorted by her, as for instance the word "Bleistift" is repeated as "Fleischtift". Small sentences, on the other hand, are even more difficult for her to repeat. She forgets the last words of the sentences and obviously the sounds that have been transmitted to her have not been retained for a sufficient length of time to enable her subsequently to repeat them. If we pronounce syllables to her which do not convey any sense, she is not able to repeat the simplest of them. The verbal intonation formerly known to her can still to some degree be associated with the motions of speech, but not in connection with articular utterances that are unknown to her or which possess no meaning. If I pronounce the word "Tisch", she correctly repeats it, but if I reverse it and spell it backwards, she is not able to repeat it. The same manifestation is present when she reads. If I write the word, "laufen", she immediately and fluently reads it, but if I write the word spelled backwards, which to her means nothing, she is not able to repeat it, although she makes an effort to do so by pronouncing the first letter. If we give her a book and allow her to make an effort at reading, we will note that she reads the first five or six words correctly, then slips, and, by the time she reaches the ninth word, can read no farther.

The visual perception so quickly tires her, that it is impossible for her to read any length of time. She

can write her name, but other dictated words or meaningless syllables cannot be written by her.

In the presence of all these manifestations, however, the comprehension of speech is totally preserved, although in the case of this patient, also, fatigue sets in after a lengthy dictation; her attention abates, and, in consequence thereof, her power of understanding also ceases.

If we again summarize the symptoms, we have the following: Preservation of the conception of speech, diminishment to almost total absence of spontaneous speech, a disturbance of the power of repetition, particularly an impossibility to repeat meaningless syllables, involvement of the power of reading and writing and a marked flagging of memory, with fatigue.

Although it must appear remarkable that a young girl of this age should be affected with organic disturbance of speech, we are nevertheless compelled to assume this, as in the present case there is not a single cogent factor pointing to hysteria. The whole clinical picture in every way represents the symptom complex of a cortical motor aphasia. The hysterical motor aphasia is particularly differentiated from the present condition by the fact that the patients under no circumstances undertake to make an effort at speaking. Their will-power is so in abeyance and out of action, that they do not attempt the slightest effort at speaking and are completely mute. Such a condition, on the other hand, we never find in cases of cortical motor aphasia, but, on the contrary, the patients make at least some effort at speaking. In the first case that I showed you, a case which was one of absolute motor aphasia, automatic movements of speech were made for the purpose of articulating the syllables, wa-wa-wa, and in this case the patient can even speak a few words and repeat some. This is never the case in hysterical aphasia.

Formerly Charcot believed that hysterical and organic aphasia could be differentiated by the fact

that disturbances of the power of writing and reading were never present in a case of hysterical aphasia. This view Charcot later corrected himself, as disturbances of reading and writing are sometimes actually present in many hysterical cases, although very rarely; furthermore, this disturbance would indicate that this case was one of organic aphasia.

The treatment is obviously the same, as delineated to you in the previous cases, and you will soon hear that this patient has also learned a few of the syllables and combinations thereof which we have practised with her the past few days.

The
Philadelphia Medical Journal
(Weekly)

JAMES HENDRIE LLOYD, A.M., M.D., Editor.
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